

Solid Waste Management Hierarchy

B.1. Source Reduction

Source Reduction is a solid waste management strategy that continues to hold great promise for the future. The term source reduction is used to describe those activities that decrease the amount (weight or volume) or toxicity of waste entering the solid waste stream. It also encompasses those activities that increase product durability, reusability and reparability.

USEPA reports an average generation of MSW for 2000 to be 4.5 lb/person/day, down from 4.6 lb/person/day in 1999. Because solid waste is tallied differently in New Jersey than by USEPA, direct comparison of generation numbers is not accurate, but a good estimate of pounds per person in New Jersey can be made:

The Division of Solid and Hazardous Waste calculates that municipal solid waste generation in 2000 totaled 17,652,159 tons, up from 17,181,767 tons in 1999. (See Appendix table B-1.) These tonnages included items not counted by USEPA: white goods, autos, iron and wood, asphalt and concrete, and any other bulky or demolition waste. These tonnages are subtracted to leave an adjusted generation of 10,266,496 tons (up from 9,725,024 tons). Given the 2000 census population of 8,414,350, citizens generated an average 1.220 tons/year (2440.23lbs/year), or 6.69 lb/day, up from about 6.33 lb/day.

Citizens of New Jersey generate more waste than the average US citizen. It is hard to determine how much of small business waste is collected with household waste and how much with industrial waste, and also hard to know how many of the subtracted heavy materials may indeed be household waste. The numbers are never precise. Nevertheless, they are very high.

Between 1985 and 2000, the rate of generation in New Jersey has risen by 15 percent. (See Appendix table [A-1](#).) In order to have disposed of 6.6 million tons of waste, as we did in 1995, 1996 and 1997, we would have needed to recycle 62 percent of the 2000 waste stream. If growth continues at the same rate, resulting in a 2015 waste stream of 27.4 million tons, we will have to recycle 72 percent of the stream to avoid growth in disposal. In reality, we only recycled 53 percent. We are not aware that any state has approached seventy percent. Consequently, we should not look to recycling to solve all of our waste management problems; even if a revived program achieves and surpasses record highs in the recycling rate, we must also prevent generation.

Examination of the table of generation, disposal and recycling rates in New Jersey indicates that waste generation is nearly split between industry and homes, with some small business and institutional waste being collected in each category. Industrial waste is more frequently recycled, while municipal waste is likely to be disposed. Moreover, municipal waste is seldom as dense as industrial waste, and thus comprises a

disproportionate volume of the waste disposed. Therefore, source reduction of municipal waste is a critical concern.

As concern over disposal capacity is relieved by the development of sanitary landfills in other states, source reduction seems less pertinent to many government agencies, but we now understand that volume reduction is the lesser value of recycling and source reduction; both reduce air emissions, and therefore greenhouse gas generation. Both reduce our need for energy. In this light, source reduction is as timely now as in the 1980s, when we feared that garbage would sit on the curb with no remaining destinations.

Impediments to Source Reduction

Notwithstanding that source reduction is at the top of the NJDEP's solid waste management strategy hierarchy, it is often overlooked due to the inherent difficulties associated with the quantification of such measures, and the lack of incentive. Indeed, source reduction of commodities such as paper, which are recycled, may actually lower total recycling rates, and appear to be a setback, rather than successes, particularly since municipalities are granted monies on the basis of tons recycled, not tons avoided.

It is also more difficult to achieve, depending as it does upon the cessation of activities, rather than new activities; it is harder to convince consumers to make do with less than it is to teach them to separate their trash. Much of modern commerce is predicated on the creation of desire for new items that promise to convey ease, status, or business success. DEP is not in a position to mount a counteractive print and television campaign to espouse simpler living and lower consumption. Nor has DEP located any government or private programs that teach source reduction to citizens or small businesses, although some successful pollution prevention programs exist for specific industry segments. Existing educational efforts are mostly focused on the early grades, when children have little purchasing power. Related efforts to teach wise money management tend also to encourage source reduction; techniques such as buying in bulk do both. But these efforts are focused on adults in economic difficulty. The average or well-to-do consumer is not presented with engaging material directing him toward source reduction at work or at home. Measurement of the effectiveness of such programs would be difficult.

Source reduction is also hampered by the fact that government has no control over the amounts and kinds of consumer goods put into the marketplace, nor over the packaging used for those goods. While government intervention in this aspect of commerce is naturally limited in a capitalistic system, the proliferation of packaging, in particular, has made it difficult for source reduction gains to be achieved. Clearly, packaging plays an important role in terms of product integrity, promotion, safety and protection; however, the over-packaging of many products is one of the causes of the increase in solid waste generation in New Jersey. In general, manufacturers have opposed legislative attempts to make them even partly responsible for the packaging waste generated by their products. As a result, the solid waste management burden associated with packaging waste has fallen on local government. This situation has led to increased discussions about product stewardship.

Product stewardship is the term used to describe a system that addresses the environmental and health impact of a product through its life cycle, i.e., from cradle to grave. This approach entails everything from design and manufacturing to packaging and distribution to end-of-life management. Responsibility for end-of-life management shifts from the public sector alone, to a shared responsibility that includes the private sector. The goal is to encourage environmentally friendly design and recycling, and reduce the amount of waste in need of disposal. Policies that promote and implement product stewardship principles should create incentives for the manufacturer to design and produce "cleaner" products - ones made using less energy, materials, and toxics, and that result in less waste (through reduction, reuse, recycling, and composting) and use less energy to operate. These policies should also create incentives for the development of a sustainable and environmentally sound system to collect, reuse, and recycle products at the end of their lives. Until a system of product stewardship is established, either by legislation or voluntary industry agreements, it will continue to be difficult to slow down the growth in solid waste generation in New Jersey and throughout the country. Despite this fact, interest in source reduction has grown to the point where there is now a movement afoot that is dedicated to waste reduction with zero waste as the ideal long-term goal. While the establishment of such a lofty goal is noteworthy, it is clearly inconceivable in the absence of a system of product stewardship.

Existing DEP Initiatives

The Department's support for source reduction is evidenced by its membership in the WasteWise program administered by the United States Environmental Protection Agency. Unlike other waste minimization programs, which shunt waste to recycling, the WasteWise program aims primarily to prevent purchase of materials, and secondly to buy recycled, in order to flatten demand for new material. As a WasteWise member, DEP has begun to pilot operational changes to minimize its two greatest waste streams: office paper and paper hand towels. One targeted method is the default setting of all copiers to two-sided copies. As successful methods are identified, they can be transferred to all government offices, achieving significant purchase reduction in this major employment sector. Success at the state government level would give DEP expertise and authority to bring those changes to private industry.

Another example is the "Pay-as-You-Throw" system. In communities with Pay-as-You-Throw programs (also known as per container systems, unit pricing or variable-rate pricing), residents are charged for the collection of municipal solid waste-ordinary household trash-based on the amount they throw away. This creates a direct economic incentive to recycle more and to generate less waste. While such systems for municipal solid waste collection and disposal are an effective means to encourage source reduction and recycling, Pay-as-You-Throw programs are not widespread in New Jersey. To address this, a publication entitled "Implementing Per Unit Pricing for Municipal Solid Waste Collection: Questions & Answers" was developed by the Department in 1995. Despite this effort, there has not been much interest in Pay-as-You-Throw systems in this state in recent years. As noted on the United States Environmental Protection Agency's

Pay-as-You-Throw website found at <http://www.epa.gov/epaoswer/non-hw/payt/index.htm>, these programs promote environmental and economic sustainability, as well as equity. As such, the Department will continue to promote this strategy and has set forth a number of recommendations (see "Recommendations" section below) that will hopefully lead to an increase in the use of this source reduction approach.

Another effective source reduction program has been the "Grass - Cut It and Leave It" program. The objective of this program is to get residents to leave grass clippings on the lawn when they mow as grass clippings provide a natural and healthy fertilizer for a growing lawn. On-site management of grass clippings and other organic matter has proven to be not only a highly effective source reduction measure but also a popular yard waste management strategy. This is evidenced by the proliferation of "Grass - Cut It and Leave It" programs in New Jersey over the past decade. The Department helped promote these programs through the publication of two brochures on the benefits associated with this activity.

In regard to source reduction support for the business sector, the Department produced a publication in 1996 entitled "How to Reduce Waste and Save Money - Case Studies from the Private Sector." Among other things, this guide highlighted actual measures that New Jersey businesses have implemented to minimize waste generation and maximize their monetary savings. The guide was distributed to businesses throughout the state and still serves as a useful resource for the private sector. The Department's website also includes source reduction suggestions for the business sector, such as using bulletin boards or computers for interoffice communication rather than paper memos, at <http://www.state.nj.us/dep/dshw/recycle/whyrecycl/office.htm>.

The Department has also been involved in several initiatives designed to reduce the toxicity of materials entering the waste stream. For example, the Department is actively participating and providing feedback regarding the Performance Partnership Agreement (PPA)-Appliance and Vehicle Mercury Switch Recovery Incentive Program. This agreement was signed January 3, 2002 by the NJDEP, USEPA -Region II, the Automotive Recyclers of New Jersey, Association of Household Hazardous Waste Coordinators, the New Jersey Chapter of Scrap and Recycling Industries and Comus International. The agreement is designed to reduce mercury emissions from this particular industry while increasing the overall benefits of recycling. This will be accomplished by collecting mercury containing switches from end-of-life vehicles and appliances, maximizing the amount of mercury removed from scrap prior to delivery to and further processing at a scrap recycling facility. The Department has also worked with the Northeast Waste Management Officials' Association (NEWMOA) on the development of model legislation that would eliminate or reduce non-essential uses of mercury in household, institutional and industrial products and processes. The model legislation provides a comprehensive framework to help states develop more consistent approaches to managing mercury-containing wastes.

The Department's participation in the Toxics in Packaging Clearinghouse is another means by which source reduction is advanced in New Jersey. The Toxics in Packaging

Clearinghouse, which is coordinated by the Council of State Governments, strives to develop public policy actions that reduce the amount and toxicity of packaging at the source, before it enters the solid waste stream. Many states, including New Jersey, have passed legislation that requires manufacturers of packaging and packaging materials to reduce the amounts of toxic substances added to packaging and packaging components. It is hoped that such legislation will reduce the amount of heavy metals in packaging and significantly reduce the amount of toxics being passed through solid waste stream into the soil, air and water.

DEP's education initiatives are hampered by the absence of good models, but new source reduction material has been inserted in the latest release of "Here Today, Here Tomorrow", DEP's solid waste curricular supplement. Additionally, DEP will be updating its website to provide more varied source reduction guidance. At present, examples of source reduction strategies for consumers, such as buying products in bulk so as to avoid excess packaging, can be found on the Department's website at <http://www.state.nj.us/dep/dshw/recycle/whyrecycl/home.htm>. Additional source reduction strategies for the home can be found at www.earth911.org.

The Department's Division of Parks and Forestry sponsors an educational program called Project Learning Tree, which has been expanded to include a challenging and provocative unit on municipal waste.

The Department is sponsoring a redistribution manual; this guide will list legitimate agencies for the reuse of items in working order. Strictly speaking, reuse is not source reduction, but results in it, as once-used items are used again in place of new purchases. The manual is targeted to real estate agents, nursing and retirement homes, colleges and universities, moving companies - all institutions that deal with clients that need to discard items as they move on.

Recommendations

As noted above, Pay-as-You-Throw systems are effective but not widespread in New Jersey. In light of this fact, the Department recommends that this source reduction strategy be revisited and reemphasized. In support of such an effort, the Department recommends that a survey of existing Pay-as-You-Throw programs be undertaken in order to better determine those aspects of such systems that have worked, as well as those aspects that have been problematic. Upon completing this task, the Department envisions working with targeted communities on the potential implementation of such programs. In addition, the Department recommends that state funding offset the initial costs associated with such programs (mostly administrative) should a dedicated source of funding be established for recycling in New Jersey. Results would be closely monitored to determine whether such systems decrease waste generation or alter purchase patterns to favor recyclable materials.

As noted above, New Jersey has legislation in place that calls for manufacturers to reduce the amount of toxic substances added to packaging and packaging components. While

this has been beneficial to the Department's source reduction efforts, the legislation needs to be amended in order to make it consistent with the updated and revised model legislation advocated by the Council of State Governments.

A statewide source reduction public education and awareness campaign is recommended. While New Jersey's recycling program has been the focus of past efforts, no public education and awareness campaign on behalf of waste prevention has been undertaken in New Jersey. The Department recommends that a one-time appropriation for such an endeavor be approved by the Legislature. Intense education and outreach should accompany the institution of Pay-As-You-Throw in new communities.

Rewriting of some state government contracts may be advisable. Contracts for existing items may be altered to require greater recycled content, or items that require lesser amounts of disposable materials. In other cases, contracts for new items may be crafted, to stimulate a market for largely unfamiliar recycled products, such as tire-derived playground surfacing.

The Department could follow up on the success of "Cut It and Leave" It with a home composting campaign, supplying or partially underwriting composting units. This would eliminate the need to collect and centralize yard waste composting, and would allow concomitant food composting.

Many states publish information to help citizens prevent receipt of junk mail, primarily credit offers and catalogs. DEP could publicize these programs and others targeting flyers, and could promote paperless systems of commerce, such as bill payment by e-mail.

Some governments fund materials exchanges, such as Minneapolis'. Materials exchanges are enterprises which can accept large volumes of business or home furnishings for sale at low prices. They are mostly used by established corporations who wish to avoid the cost of disposal of outdated material, and start-ups which need to avoid costs. DEP may wish to work with Trenton Materials Exchange to find a more secure home for this non-government effort, and could seek to establish similar exchanges in Northern and Southern locations.

Project Learning Tree depends for its implementation on a body of trained teachers. At present, school systems are required to fund the training for their teachers. At such time as funding can be obtained, the Department could fund, partially or completely, the tuition of science and social studies teachers across the state, thereby increasing the attractiveness of this program in contrast to other training.

The reuse guide should be expanded to cover all 21 counties in New Jersey.

Source reduction techniques should be introduced through the LEEDS program, which is already successfully promoting recycling in design and construction.

The Department may wish to work with the Commerce and Growth Commission and EDA to encourage recycling companies to relocate in New Jersey (tire recycling, carpet recyclers, paint recyclers).

The Department may wish to partner with NJIT or Rutgers to increase food composting with restaurants and food chains.

It is recommended that the Department revisit the Clean Builders program.

B.2. Recycling

As noted in the Appendix table B-1, the Department's statistics indicate that New Jersey recycled 38% of its municipal solid waste stream and 53% of its total solid waste stream in 2000. While these recycling rates are noteworthy they are significantly lower than the 1995 peak municipal solid waste recycling rate of 45% and the 1997 peak total solid waste recycling rate of 61%. Clearly, the continued downward trend in our state's recycling rates is troubling and cannot be overlooked. Among other factors, the loss of the program's dedicated state funding source in 1996 has played a major role in this decline. The recent signing of the "Clean Communities and Recycling Grant Act" by Governor James E. McGreevey is a step in the right direction since it includes funding for recycling grants to counties and municipalities, however, it does not fully address the funding needs of our state's recycling program. As such, it is imperative that this issue be addressed and that a strategy be put in place that will help fully fund a comprehensive state recycling program. This, in turn, will lead to the development of stronger and more effective recycling programs and increasing recycling rates throughout the state. Recycling has proven to be an environmental and economic success story, however, without such action, the recycling success that New Jersey has achieved will continue to be jeopardized even with the recent enactment of the Clean Communities legislation.

Historical Background

Despite the recent decline in our state's recycling rates, New Jersey is still a nationally recognized leader in recycling. The passage of New Jersey's mandatory recycling legislation in 1987 was a major milestone in our state's solid waste management history and helped establish New Jersey as a leader in this field. The New Jersey Statewide Mandatory Source Separation and Recycling Act (Recycling Act), N.J.S.A. 13:1E-99.11 et seq., set forth an ambitious program that reshaped the everyday lives of all state residents, businesses and institutions. Among other things, the Recycling Act required New Jersey's twenty-one counties to develop recycling plans that mandated the recycling of at least three designated recyclable materials, in addition to leaves. County recycling plans were also required to designate the strategy to be utilized for the collection, marketing and disposition of designated recyclable materials. Other provisions of the Recycling Act required municipalities to adopt an ordinance based upon their county's recycling plan. The initial goal of the Recycling Act was to recycle 25% of the municipal solid waste stream. That goal was more than doubled through legislation enacted in 1992

(P.L. 1992, c.167), amending the 1987 Recycling Act with a new challenge to recycle 50% of the municipal solid waste stream and 60% of the overall waste stream by the end of 1995. The recycling goal for the total solid waste stream was eventually raised to 65% by the end of 2000. This was done through a Departmental policy set forth in 1997.

Another important provision of New Jersey's landmark recycling legislation was the establishment of a tax of \$1.50 per ton on solid waste disposed at landfills and transfer stations statewide. In accordance with the Recycling Act, revenue from this tax was credited to the State Recycling Fund and allocated and used for the following purposes:

- 40% - municipal and county recycling tonnage grants;
- 35% - low interest loans or loan guarantees to recycling businesses and industries and recycling market development research;
- 10% - public information and education;
- 8% - county recycling program grants; and
- 7% - state recycling program planning.

As mentioned above, this dedicated funding source for recycling expired at the conclusion of 1996. The expiration of this so-called Recycling Tax also put an end to the Department's low-interest business recycling loan program, which had been used by many companies to start or expand their recycling operations. Over the life of the program, the Department approved 48 loans valued at over \$21 million. Recycling loans ranged from \$90,000 to \$3,000,000 and were used to purchase recycling equipment, among other things. Another important financial incentive that had been available to the private sector recycling industry was the recycling equipment tax credit. While this program also expired at the end of 1996, it was a demonstrated success in diverting recyclable materials from landfills while creating new markets, new jobs, increased production and attracting investment. In fact, in the last year of the program, the Department approved 212 tax credit certifications for 38 corporations. Among those certifications, 142 were for the purpose of processing source separated recyclable materials, 38 were for manufacturing purposes and 32 were for transporting source separated recyclable materials.

As noted above, the loss of the Recycling Tax is one of the key factors explaining New Jersey's declining recycling rates. While it is true that the economic impact resulting from a number of key court decisions, as well as the continual increase in the amount of waste generated and the slumping market value of many recyclable commodities all play a role in the downward trend that has developed, the absence of a dedicated source of funding for recycling has had the most dire impact on recycling in New Jersey. Among other things, funds generated by the Recycling Tax were used at the local level to support recycling coordinator positions, education and promotion campaigns, business and school recycling programs and enforcement functions, among other things. Such efforts suffered greatly as a result of the loss of this dedicated funding source for recycling. Compounding this situation was the expiration of the Resource Recovery Investment Tax at the conclusion of 1995. While not designed to support recycling programs, funds

generated by this tax were sometimes used by counties for recycling purposes. The Solid Waste Services Tax remains a viable tax and is used to support some county recycling efforts, however, this fund is not sufficient, nor a replacement for a dedicated source of funding for a comprehensive recycling program.

It should be noted that the Legislature authorized special appropriations for municipal and county recycling efforts in State Fiscal Years 2001 and 2002. While these measures helped local recycling efforts to some degree, the amount of funding provided was significantly less than the grant amounts previously provided by the Recycling Tax and therefore incapable of fully addressing local recycling needs. Furthermore, as noted above, the recently enacted Clean Communities and Recycling Grant Act will provide funding for local recycling efforts. While this is a positive development that will result in the annual allocation of \$4 million of the Clean Communities Program Fund for annual municipal and county recycling grants, it too represents significantly less than the funding previously provided for this purpose by the Recycling Tax. On average, the Recycling Tax generated \$10 million each year for New Jersey's comprehensive state recycling program. The Clean Communities legislation provides no funding for other components of a comprehensive state recycling program, such as statewide education programs, recycling business loans and recycling market development. These often-overlooked components were integral to the overall rise and success of recycling in New Jersey.

As mentioned previously in this report, source reduction and recycling have been designated as the preferred solid waste management strategies for New Jersey. As such, they have been placed at the top of the State's solid waste management strategy hierarchy. This reemphasis on recycling could not come at a better time. A renewed focus on recycling is warranted in order to make New Jersey the preeminent state for recycling and forward-thinking recycling policy.

Environmental Benefits

As noted above, recycling is a well-documented environmental success story. In 2000, New Jersey recycled over 8.3 million tons of its total solid waste. Recycling not only saves resources and energy, but also reduces the need for landfills and incinerators. In regard to energy conservation, recycling is especially beneficial. Manufacturing plants that utilize recyclable materials require significantly less energy than those that do not. For example, aluminum produced from used beverage cans requires 90-95% less energy than aluminum produced from bauxite ore. In addition, steel produced from recycled ferrous metals requires 74% less energy than steel produced from virgin ores, while recycled glass production requires 20% less energy than glass production from virgin materials. Recycled paper production also requires between 23% to 74% less energy than virgin paper production. In addition to their environmental importance, this environmental benefit of recycling also results in monetary savings for manufacturers.

Recycling also results in reduced emissions of air and water pollutants. Recyclable paper production creates 74% less air pollution and 35% less water pollution than virgin paper

production. In addition, the production of recycled steel creates 85% less air pollution and 40% less water pollution than the production of steel from virgin ore, while recycled glass production creates 20% less air pollution as compared to production with virgin materials. Recycling also promotes our state's Greenhouse Gas Reduction goals. The USEPA calculated that on average, approximately 1.67 metric tons of CO₂ equivalents are avoided for every ton of Municipal Solid Waste (MSW) recycled. If the MSW recycling rate increases from 34% in 1990 to 60% by the year 2005, a total of 7.7 million metric tons of CO₂ equivalent in avoided Greenhouse Gas emissions would result. (2000 MSW recycling rate = 38%).

Economic Benefits

While the environmental benefits of recycling are well known, the economic benefits of recycling are also significant despite the fact that they are often overlooked. Simply stated, recycling has encouraged the growth of an industry and created jobs. New Jersey's well-developed recycling industry, which includes manufacturers of various recycled products, specialized processing facilities and transporters, is an important segment of the state's economy. A recent study conducted by the Northeast Recycling Council and United States Environmental Protection Agency found that almost 27,000 people in New Jersey are employed in recycling and reuse establishments and that total receipts from these establishments is valued at over \$5.9 billion annually. New Jersey's recycling infrastructure includes 17 intermediate processing facilities for Class A recyclable materials (glass bottles, metal cans, plastic containers, paper grades), almost 100 NJDEP-approved recycling centers for Class B recyclable materials (concrete rubble, asphalt debris, wood scrap, scrap tires) and numerous steel mills, foundries and paper mills.

Recycling can save money on disposal costs as well. For example, a survey (see below) conducted by the Department in June, 2001 shows that recycling asphalt debris, concrete rubble, used bricks and blocks, felled trees and stumps and wood scrap costs significantly less than disposing of these materials as garbage.

Average Cost to Recycle

Asphalt debris* - \$6.70 per ton
Concrete rubble* - \$7.50 per ton
Used bricks and blocks* - \$9.50 per ton
Trees and stumps - \$33.50 per ton
Wood scrap - \$47.60 per ton

Average Cost of Disposal

Over \$68.00 per ton and can be as high as \$94.00 per ton.

* Several recycling centers did not charge any fee for the receipt of these recyclable waste materials.

Survey results based upon 36 respondents.

Recycled products are also becoming an increasingly important component of commerce. There are over 1,000 different types of recycled products on the market and thanks to changes in technology and increased demand, today's recycled products meet the highest quality standards. Recycled products are also more readily available than ever before. Such products can be found in major retail stores, supermarkets, garden centers, local shops, catalogs and on the Internet. Furthermore, recycled products are affordable. Many recycled products cost the same or less than comparable products made with virgin feedstock. While some recycled products cost more than their virgin counterparts, many are less expensive over the life of the product. For example, the purchase of recycled plastic lumber makes economic sense when life cycle cost analysis is taken into consideration. By purchasing recycled products, consumers are helping to create long-term stable markets for the recyclable materials that are collected from New Jersey homes, businesses and institutions.

New Jersey Buy Recycled Business Network

The New Jersey Buy Recycled Business Network (Network) is a leadership group of companies, both big and small, that have made a commitment to begin purchasing or increase their purchase of recycled products and materials as part of their day-to-day operations. The role of the organization is to bring the Buy Recycled message to as many companies as possible. The Department was instrumental in forming the Network in 1993 and has provided limited financial support for special Network projects and activities, as well as staff support. In fact, one of the staff in the NJDEP, Division of Solid and Hazardous Waste is the Co-Chair of the organization and is responsible for coordinating the activities of the Network. The Network produces two "Buy It Again!" newsletters each year and holds two governing board and two general membership meetings per year. In conjunction with the Department, the Network has participated in an USEPA satellite teleconference on recycled product procurement, the New Jersey League of Municipalities trade show and a number of events hosted by the National Association of Purchasing Managers - New Jersey Chapter. The New Jersey Buy Recycled Business Network also recognizes outstanding achievements in recycled product procurement through its annual Buy Recycled Business Award. Furthermore, in recognition of its partnership with the Department, the Network's website is linked to the website of the Bureau of Recycling and Planning and can be found at www.state.nj.us/dep/dshw/recycle/brbn

State Agency Procurement of Recycled Products

In addition to urging businesses and other consumers to purchase and use recycled products, state government must practice what it preaches and buy such items for its government operations. This is especially important as government not only wields great purchasing power, but also has the ability to serve as a role model for others. There are two significant developments that have taken place over the past decade in this regard. In

1993, the New Jersey Legislature amended the Recycling Act to require more aggressive purchasing of recycled products by government. The legislation, P.L. 1993, c.109, set ambitious recycled product procurement goals for state government and included specific purchasing schedules for paper and paper products, among other things. A price preference for the purchase of recycled products was also established in the legislation. Executive Order #91 was also signed in 1993. This document was even more specific in terms of state recycled product procurement goals than was P.L. 1993, c.109. While these measures are important, compliance with the specific requirements of these provisions has been lacking as the state has underachieved in regard to recycled product procurement. In an attempt to address this situation, the Department sponsored the development of an easy-to-use guide to the procurement of recycled and environmentally preferable products. In addition, the Department has advocated the development of an updated and more comprehensive executive order regarding the purchase of environmentally preferable products.

"Green" Building Initiatives

Today, more and more consumers are demanding environmentally responsible products, including the materials used to build and furnish their homes. The use of recycled building products and furnishings in construction and renovation is an integral part of this "green" building movement. The Department has promoted the use of recycled building products and furnishings for many years. In fact, the Division of Solid and Hazardous Waste has coordinated and held a "green" building conference and trade show every two years since 1994. This event has been widely attended by architects, builders, developers, engineers and interior designers. It should also be noted that the use of recycled content products is included as a recommended building practice in the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED TM) Rating System and can fulfill credit requirements needed for LEED certification.

The NJDEP is also at the forefront of other innovative "green" building initiatives such as its participation in the High Performance Schools Project and its development of a recycled plastic lumber bridge. The Department is participating in a working group of government and non-government officials whose goal is to promote the design and construction of "green" school buildings that utilize environmentally friendly building materials and technologies, etc. New Jersey is embarking on a major school construction project at this time. The working group hopes to spark the interest of school districts through its efforts and see the construction of schools that are energy efficient, use renewable energy sources, use recycled products and are healthy and productive for students and staff. Furthermore, an educational program on construction and demolition waste management for those involved in school construction and renovation projects is planned for the upcoming year.

As mentioned above, the Department also provided \$75,000 for the development of a recycled plastic lumber bridge in Wharton State Forest. The bridge was constructed in the fall of 2002 and is unique in that it is the first one to use structural I-beams made of recycled plastic lumber. The plastic lumber used in this project was made from materials

collected from New Jersey's curbside recycling programs by Polywood, Inc. of Edison, New Jersey. The Department collaborated on this project with Rutgers University and the Army Corp of Engineers. The bridge is open to the public, but will be used primarily by emergency and fire vehicles. This project is a prime example of recycling market development at work as it demonstrates the benefits of recycled plastics in a new application for the state.

Communications, Public Relations and Education

While the loss of funding in the mid-'90s has hampered the Department's ability to conduct public relations and educational programs on behalf of recycling, a number of significant projects of this nature were implemented during this period. In 1999, the Department developed two promotional messages that were shown at movie theaters throughout New Jersey. The promotional messages were shown prior to the start of movies on approximately 435 screens across the state. One message promoted the Buy Recycled cause while the other congratulated New Jersey residents for their recycling achievements. The Department also provided financial support, most recently in 1999, for Environmental Defense/National Ad Council media campaigns on behalf of recycling. At this time, the Department is considering the development of a targeted media campaign aimed at improving recycling in multi-family housing, small businesses and schools. The campaign would also feature promotional messages in Spanish for New Jersey's growing Hispanic community. The NJDEP has also been an active participant in the America Recycles Day event since its inception in 1997. This annual national recycling awareness event is held every November 15. The Department has procured and distributed numerous promotional items for county and state America Recycles Day events. In addition, future America Recycles Day events, as well as other events, will benefit from the new educational and promotional solid waste management display developed by the Department.

The development of the Department's recycling and Buy Recycled websites is another major achievement that has occurred in recent years. The Bureau of Recycling and Planning website found at www.state.nj.us/recyclenj contains valuable information on recycling facilities, coordinators, and recycling data, among other things. The Buy Recycled website found at www.recyclenj.org contains links to a wide variety of recycled products and information sources. In terms of publications, the most significant document developed by the Department over the past decade was "Practical Recycling Economics - Making the Numbers Work for Your Program." This publication was written as a reference and instruction manual for municipal and county recycling coordinators and was designed to provide specific information, tools and strategies to make recycling more cost-effective for individual recycling programs. This manual was completed in 1999. An additional chapter that focuses on cost-effective promotional strategies that can be employed on behalf of local recycling programs will be added to the manual in 2003. The Department is also developing an educational brochure designed to address recycling in schools. The brochure, entitled "Does Your School Pass the Recycling Test?" will be available in the upcoming year.

The Department is an active partner in and supporter of the certified recycling coordinator training program that is coordinated by the Cook College Office of Continuing Professional Education (Rutgers University). This educational and training program is the only one of its kind in the United States. The program is funded by the NJDEP and has resulted in the certification of over 200 recycling professionals. The Department also helped establish the South Jersey Environmental Information Center in the West Deptford Public Library. This facility now houses a vast library of recycling related educational resources. A facility is planned for the northern part of the state. Another important way by which the Department promotes recycling is through the annual recycling awards program that is coordinated in conjunction with the Association of New Jersey Recyclers (ANJR). The awards recognize the outstanding recycling achievements of municipalities, counties, businesses and industry, as well as schools and other institutions and are presented at ANJR's annual recycling symposium. This program has generated positive publicity for New Jersey's recycling efforts. Furthermore, the recent recycling poetry contest held by the Department for children in grades 4 - 6 was a huge success. There were over 300 entries and much excitement surrounding the program. The winning entries were honored at the ANJR annual recycling symposium and featured in a 2003 calendar that was distributed to all schools with grades 4, 5 or 6. A similar event is planned for the upcoming year.

NJDEP - NJDOT Recycled Materials Task Force

Due to its early success, the Department and the New Jersey Department of Transportation (NJDOT) continued its task force dedicated to promoting the use of recycled materials in NJDOT road construction and maintenance projects into the mid-1990s. During this period, the Task Force used its experience in developing specifications for reclaimed asphalt pavement, recycled concrete aggregate and "glassphalt," i.e., glass aggregate mixed with asphalt, to test many new recycled material applications. This led to the development of a specification that permitted the use of pre-consumer asphalt shingles in hot mix asphalt and its approval of recycled plastic traffic cones, delineators and guide rail knockouts. A specification for joint filler made with recycled rubber was also developed. In addition, composted sewage sludge was tested for its ability to grow and sustain typical roadside grasses in areas of poor soil.

In an effort to disseminate the findings of the NJDEP - NJDOT Recycled Materials Task Force, the Department coordinated a half-day seminar on the subject for the road construction industry, as well as for NJDOT engineers. The event was well attended and helped raise the awareness of those in this field to the benefits of using recycled materials in such applications.

Participation in the Northeast Recycling Council

The Department has been a member of the Northeast Recycling Council (NERC) since 1987. The mission of NERC is to ensure the long-term viability of recycling in the northeast while maximizing its full environmental and economic benefits. Through the

involvement of the NJDEP and other state environmental agencies, many successful initiatives have been undertaken. Recycling investment forums were held as a way to introduce recycling businesses to venture capital firms, investment banks and individual investors. State development workshops were also coordinated, including one in New Jersey. These recycling finance workshops and training sessions for economic development officials proved very beneficial.

The Department also participated in the development of NERC's voluntary industry agreements to buy recycled products and materials. Through the collaborative efforts of NERC and its member states, major industry groups such as the Newspaper Publishing Association and the Yellow Pages Publishing Association consented to voluntary agreements that called for their members to purchase paper with a specified percentage of recycled content. According to a recent report, NERC has received commitments from newspaper publishers in the northeast that will ensure that 86% of the newsprint used in the northeast will have an average recycled content rate of 27%.

Used Motor Oil Recycling and Universal Waste Recycling

In 1996, the Department incorporated the United States Environmental Protection Agency's used oil recycling rules at 40 CFR Part 279. Consequently, used oil is no longer classified as a hazardous waste in New Jersey. This regulatory change enables recycling facilities for this material to be established through the Class D recycling center approval process rather than the hazardous waste facility permitting process. In order to further promote used oil recycling, the Department also updated, revised and published a new brochure on used oil recycling. The brochure is targeted at those individuals who change their own automobile's oil and is entitled "Recycle Used Motor Oil - When You Do It Yourself, Do It Right."

The readoption of the Department's recycling regulations in 2002 incorporated the United States Environmental Protection Agency's Universal Waste rules. This allows the recycling of certain hazardous wastes under a Class D recycling center approval rather than a hazardous waste Treatment, Storage and Disposal Facility (TSDF) permit. This will enable facilities to profitably recycle materials that would otherwise be disposed. New Jersey's new rule will apply to the following materials: batteries; fluorescent bulbs; paints and finishes; thermostats and all other mercury-containing devices; and consumer electronics.

Product Stewardship/Electronics Recycling

Product stewardship addresses the environmental and health impact of a product through its life cycle, i.e., from cradle to grave. This approach entails everything from design and manufacturing to packaging and distribution to end-of-life management. The goal of product stewardship is to develop a system of shared responsibility that; decreases the life-cycle impacts of products and packaging from design through proper end-of-life management, minimizes environmental costs and shifts the life cycle costs from

government to the manufacturers and consumers of the products as well as creates incentives for the manufacturer to design and produce environmentally/eco friendly products. Responsibility for end-of-life management shifts from the public sector alone to a shared responsibility that includes the private sector. The goal is to encourage environmentally-friendly design and recycling, and reduce flow to the landfills.

Representatives from the Division of Solid and Hazardous Waste have been actively engaged in a "dialogue" as part of the National Electronics Product Stewardship Initiative (NEPSI), a forum for stakeholders to identify and reduce environmental and health impacts from consumer electronic product manufacture, use, storage and end of life management. After much negotiation an agreement to develop a nationwide "front-end" financed system to handle used electronics was established in 2002. This milestone agreement integrates the costs of managing used electronic products into the overall purchase price of new electronic products.

Recommendations

As noted above, there has been no dedicated source of funding for recycling in New Jersey since the expiration of the Recycling Tax in 1996. The recently enacted Clean Communities and Recycling Grant Act represents a step in the right direction since it includes funding for recycling grants to counties and municipalities, however, it does not fully address the funding needs of local recycling programs, nor does it provide any funding for a comprehensive state recycling program. Clearly, the recent decline in New Jersey's recycling rates can be tied into this funding issue. In order to remedy this situation, the Department has advocated and continues to advocate the passage of legislation that would establish a stable and dedicated source of funding for recycling that does not rely on the fund generated by the Clean Communities and Recycling Grant Act. The Department would be willing to work with the Legislature to create an equitable and non-burdensome funding mechanism that would help revive New Jersey's struggling recycling programs.

The establishment of programs designed to encourage the recycling of food waste and other paper, i.e., paper other than newspaper, corrugated and office paper, is recommended. Supermarkets, grocery stores, bakeries and institutions, such as hospitals and universities, generate large amounts of food waste. At this time, much of this waste is not recycled, but rather landfilled. In fact, 2000 data reveals that only 25% of the food waste generated in New Jersey was recycled. In light of the fact that the tonnage of food waste generated per year in New Jersey is greater than the combined tonnage of old newspapers, glass containers and aluminum cans, food waste recycling represents a great opportunity for achieving recycling gains in this state. Increased recycling of other paper, which comprises slightly more than 9% of the total solid waste stream, also represents a great opportunity for achieving recycling gains since only 9% of this material was recycled in 2000.

The establishment of programs designed to encourage recycling in small businesses, multi-family housing and schools (including colleges and universities) is recommended.

While recycling has been required since the adoption of the Recycling Act in 1987, compliance with the requirements of the legislation has been inconsistent in these sectors. A 1995 research project entitled "Recycling in Small Business," prepared by the Tellus Institute on behalf of the NJDEP, revealed that approximately 33% of the small businesses surveyed were unaware that any materials were required by law to be recycled. Furthermore, 25% of the businesses surveyed were not recycling any materials, whether required by law or not. In addition to the need for improved collection systems for small businesses, the report indicated that over 50% of the small businesses surveyed agreed that they needed more information about recycling. While recycling in multi-family housing is more well developed than in the small business sector, a 1995 Tellus Institute study on this sector, revealed that over 20% of the residents from one of the urban multi-family housing communities surveyed were unaware that recycling is required by law in New Jersey. The establishment of recycling programs in schools (including colleges and universities) has also been inadequate. This is especially troublesome since schools should be setting an example as a good neighbor. Not only is the need to enforce the legal requirements of New Jersey's recycling program apparent, but the need for educational programs geared toward these sectors is also clear. This will result in an increase in the amount of material being recycled, as well as increased recycling rates.

The Recycling Act requires municipal master plans to be revised to include provisions for the collection, disposition and recycling of designated recyclable materials within any development proposal for the construction of 50 or more units of single-family residential housing, 25 or more units of multi-family residential housing and any commercial or industrial development proposal for the utilization of 1,000 square feet or more of land. This requirement can be found at N.J.S.A. 13:1E-99.16c. While the Department has not conducted a survey to determine the exact degree of compliance with this section of the law, it is a widely held position that municipal governing bodies have largely ignored this requirement, or are unaware of it. As such, the Department recommends that a collaborative effort with the Department of Community Affairs (DCA) be initiated to address this situation. By working with the DCA and local planning boards on this requirement, the necessities for successful recycling will be incorporated into all future development proposals, which in turn will facilitate recycling at these locations. This can only help to strengthen our state's recycling program.

The Department recommends that a targeted tax credit program for specific recycled material utilization be established by the Legislature. Such a program would help to create long-term stable markets for the recyclable materials that are collected from New Jersey homes, businesses and institutions. By spurring on demand for recycled products and materials through the proposed program, state government would be protecting and supporting its investment in recycling. An example of a material that would benefit greatly from such a tax credit program is compost derived from food waste. As noted above, food waste recycling, including composting, is an area of great potential and one that should be supported by the state. Support for composting programs would also be found in the agricultural community. The production of containerized landscaping plants and trees has become one of the most significant components of New Jersey's agricultural

base. In order to meet the demand for containerized plants and trees, farmers and nursery operators will need increasing quantities of compost. By supporting food waste recycling through a tax credit program, the recycling industry and the agricultural sector both benefit.

The Department recommends that a new Executive Order that requires state agencies to purchase environmentally-preferable products, particularly recycled products and alternatives to products containing mercury, lead and other persistent bioaccumulative toxic substances (PBTs) be adopted. While state law and Executive Order #91 (both adopted in 1993) require the procurement of recycled products by state agencies, it has been reported that other than the NJDEP, state agencies, in general, have not complied with the requirements of the law or executive order. In light of this situation, a new and revised executive order is needed. The proposed executive order would require state agencies to purchase a wide variety of recycled products, as well as products made with little or no PBTs. It is also recommended that the proposed executive order adopt the practice of life cycle cost analysis for those environmentally-friendly products that may cost more initially, but are less expensive over the life of the product due to reduced or non-existent maintenance costs. An example of a product that would benefit from a procurement system that utilizes life cycle cost analysis is recycled plastic lumber. Lastly, it is recommended that the proposed executive order establish an Environmental Procurement Specialist position in the Department of Treasury, Division of Purchase and Property. By having a staff person dedicated to this effort, the requirements of the executive order will be more readily achievable.

A renewed focus on enforcement for recycling is recommended. This must involve enforcement at all levels of government and at all stages in the recycling process. DEP inspection of solid waste entering disposal facilities must be conducted on a more regular basis to ensure that mandatory recyclable materials are not included in loads of solid waste. Those officials at the county and municipal level empowered by the County Environmental Health Act (CEHA) must also place more emphasis on the enforcement of county recycling mandates. Among other things, this should include increased inspections of transporters and solid waste disposal facilities to ensure compliance with local recycling requirements. In addition, municipal officials must do more to ensure that residents, especially those living in multi-family housing establishments, businesses and institutions comply with the municipal recycling ordinance.

B.3. Financial Assistance Programs

Overview

Since the last update several financial assistance programs have ended while only two were added. The Resource Recovery Investment Tax (RRIT) sunset on January 1, 1996. The RRIT Program ran from 1985 to 1996 and distributed \$ 238,308,281.00 to the counties. The Recycling Tax also expired on January 1, 1996, but the Department has been able to continue parts of the program through loan repayments. The Solid Waste Services Tax (SWST) which has no sunset date continues to provide funds to county

governments for preparing, planning and implementing solid waste management plans. Lastly, in response to a growing number of West Nile Virus cases, the Department initiated two programs to assist counties with the clean up of scrap tire piles. The programs were the FY'01 Scrap Tire Management Fund and the FY'02 Scrap Tire Pile Remediation Fund. Details of the currently active programs are as follows.

Recycling Fund

As noted above the Recycling Tax sunset on January 1, 1996. However, the Recycling Fund is receiving monies from businesses making payments on their business recycling loans issued in the 1990's. Payments in decreasing amounts will continue through 2010. The Fund should be depleted shortly thereafter unless another source of funds is dedicated to recycling. The Department will continue to administer the Recycling Tonnage Grant Program. In addition, the Department will continue to award research and education contracts to State colleges and universities. All the other financial assistance programs supported by the Recycling Fund as detailed in the last update have been suspended for lack of funds.

Since 1982, more than \$50 million has been granted to municipalities and counties based on the tons of documented, allowable materials reported as recycled from residential, commercial and institutional sources. These materials have included post-consumer products such as glass, plastics, aluminum and other metals, paper and paperboard, yard and food waste. A portion of the funding is allocated as bonus grants for those municipalities and counties that provide, at their own expense, for the collection of recyclable materials. A separate tonnage grant rate for bulky materials such as asphalt, concrete, wood and ferrous scrap has also been established.

The Department has awarded Rutgers University over \$1.2 million to conduct the New Jersey Recycling Certification Series (RCS)over the last nine years and plans to continue its support. Designed to teach the diverse skills required to operate effectively in today's turbulent regulatory and business environment, the series provides training for recycling and solid waste management professionals in New Jersey's public and private sectors. Over 450 registrations were received for 2000-2001 RCS courses. Through partnerships with the New Jersey Public Works Association and the League of Municipalities and continued co-scheduling with the Association of New Jersey Recyclers, Rutgers has increased the exposure of our programs and has recruited new attendees for the courses, workshops and seminars.

Over \$2 million has been awarded for market research and development activities. Notable among these contracts was a market development study for waste paper, plastics, ferrous automotive scrap, tires and batteries. The study examined current and future supply and demand for recycled materials and recommended state initiatives to expand the markets for these materials. Other research and development activities have included a yard waste compost research program; an assessment of the environmental impact from the manufacture and disposal of consumer packaging; evaluation of the biodegradability

of plastic film; and a research project designed to examine the utilization of used newsprint as animal bedding.

Solid Waste Services Tax Fund

The Solid Waste Services Tax (SWST) began at \$.50 per ton in 1985 and has increased \$.05 annually to a current rate of \$1.40 (2003) per ton. The tax is collected on all solid waste disposed of at landfills in New Jersey. The SWST fund has no sunset date. More than \$ 70 million has been collected to date. The revenue is distributed to all the counties for the purpose of preparing, revising and/or implementing district solid waste management plans, including the implementation of the State Recycling Plan. Most of the counties use their annual entitlement for recycling programs and household hazardous waste collection programs. Each county's entitlement is based on the amount of solid waste it generates in a calendar year in proportion to the State total, with no county receiving less than 2% of the available funds for each year.

Scrap Tire Management Fund/ Scrap Tire Pile Remediation Fund

The Legislature appropriated \$2.4 million from the Sanitary Landfill Contingency Fund in both 2000 and 2001 to provide counties with financial assistance to implement scrap tire clean up projects. Each county had to submit a spending plan in order to receive its entitlement from the FY'01 Scrap Tire Management Fund. Eligible activities were: 1) collection, transportation and disposal/recycling of scrap tires, 2) temporary storage of scrap tires, 3) enforcement activities, and 4) tire assessment and clean-up planning.

The second round of tire funding was the FY'02 Scrap Tire Pile Remediation Fund. The intent of these funds was to clean up some of the larger tire pile sites in the state, whether public or private, and reclaim a portion of the land for public use. Unlike the first round of tire funding, the counties had to compete for these funds, plus they had to provide a twenty-five percent match. The Department maintains a list of at least twenty-five tire pile sites containing more than 50,000 tires. The majority of funds went to clean up four sites on the list located in Atlantic, Burlington, Gloucester and Salem Counties. The Department will seek other sources of funding to address this problem.

B.4. Beneficial Use Determinations

Beneficial Use Project (BUD) Approval Process

The Division of Solid and Hazardous Waste, Bureau of Resource Recovery and Technical Programs issues Certificate of Authority to Operate (CAO) for a beneficial use project determination (BUD), pursuant to N.J.A.C. 7:26-1.7(g). The Department is very interested in supporting and encouraging the beneficial use of materials that would otherwise be waste, in environmentally sound applications. This preserves valuable landfill space for essential disposal uses and helps conserve natural resources by using valuable existing materials.

The term "BUD", an acronym for the term "beneficial use determination," has been adopted by many states and the public as a general reference to regulatory beneficial use approvals. In New Jersey the use of the term BUD may reference the process of an applicant obtaining a CAO for a beneficial use project, and can also mean the actual approval or project. The CAOs for beneficial use projects are issued under the exemptions to the solid waste regulations as specified at N.J.A.C. 7:26-1.1(a)1 and N.J.A.C. 7:26-1.7(g), allowing non-putrescible material separated at the point of generation to be sent to an approved facility for beneficial use or for on-site beneficial use at the site of generation.

To date, the Department has issued 302 CAOs authorizing beneficial use of different materials for more than approximately 4.3 million cubic yards of these materials. The Department estimates that by beneficially using these materials businesses and the general public have saved approximately two hundred million dollars versus the cost of purchasing primary products and raw materials.

An electronic copy of the Application Form and Instructions for Completing the Certificate of Authority to Operate (CAO) a Beneficial Use Project can be found at www.state.nj.us/dep/dshw/rrtp/benuseap.htm. To ensure all of the necessary information needed to complete the application review is included on the CAO application, a CAO-Approval Application Review Checklist is provided at the following web link: www.state.nj.us/dep/dshw/rrtp/budchkls.pdf . A list of authorized New Jersey beneficial use projects is available at <http://www.state.nj.us/dep/dshw/rrtp/abenusep.htm> .

Technology Acceptance Reciprocity Partnership Tier II Beneficial Use Determination Protocol

The New Jersey Department of Environmental Protection (NJDEP) through the Office of Innovative Technology and Market Development (OITMD) assumed the lead role for developing the Technology Acceptance Reciprocity Partnership (TARP) Tier II Beneficial Use Determination (BUD) Protocol. TARP, which is made up of individuals from the environmental agencies of IL, MA, MD, NJ, NY, PA, and VA, is a workgroup of the Environmental Council of States (ECOS). In addition to the OITMD, the staff from the Division of Solid and Hazardous Waste was consulted to include overall technical, procedural and administrative information to develop and finalize this document.

Beneficial uses of non-hazardous RCRA solid wastes can provide an environmentally preferable source of raw materials, save energy, reduce greenhouse gas emissions, reduce emissions of air and water pollutants, and conserve natural resources. Therefore, the goal of this Tier II BUD Protocol is to encourage the use of certain non-hazardous RCRA solid wastes as raw materials. Also, as described within the Tier II BUD Protocol, the uses of the materials must maintain specified State's acceptable level of risk, protect human health and the environment, and be managed in accordance with the conditions of the determination.

The first final draft of the BUD Protocol was accepted in January 2002 by the NJDEP. Recently, the TARP States decided to revise the original document to make it more "user-friendly". Therefore, the TIER II Bud Protocol was revised into two separate documents - one for regulators and the other for vendors. Presently, the two documents are being finalized, after which they will be submitted for the NJDEP's acceptance, and made available to the respective regulatory programs and the public.

B.5. Mercury Switch Removal Research/Demonstration Project

The Department convened its first Mercury Task Force in 1993. This Task Force recommended a stringent reduction in mercury emissions from municipal solid waste (MSW) incinerators, which were subsequently implemented by NJDEP and resulted in a 90 percent reduction from this source. The second Task Force convened in 1998, triggered by a concern that additional significant sources existed and that energy deregulation would increase the output from Midwestern power plants.

The 1998 Mercury Task Force advocated an overall goal of the virtual elimination of anthropogenic sources of mercury. Towards this goal, a two step milestone of a 75% reduction in air emissions below estimated 1990 levels by 2006 and an 85% reduction below 1990 levels by 2011 was recommended. The Task Force reviewed all local and regional mercury sources and New Jersey is looking for reductions in all sources as practicable. New Jersey expects this effort to result in the attainment of water quality standards given the scientific and quantitative basis of the current recommendations combined with the successful track record of the implementation of the primary recommendation of the first Mercury Task Force.

The broad range of recommendations made by the task force include both enforceable and voluntary actions. Of enforceable actions, New Jersey is in the process of implementing Task Force emission reduction recommendations for new emission rules for iron and steel manufacturing, coal combustion, medical waste incineration, hazardous waste incineration and additional controls on municipal solid waste incineration. New Jersey is also reviewing its enforcement policy regarding emission limits already in effect pursuant to permits for individual iron and steel manufacturing facilities.

The Report of the Mercury Task Force can be viewed on the web at http://www.state.nj.us/dep/dsr/mercury_task_force.htm

Draft Scope of Work - Mercury Switch Data Collection Project

The NJDEP Division of Science, Research and Technology (DSRT) is recommending strategies related to solid waste management, in consultation with a selected consultant who will perform the following three tasks:

- 1). Coordinate and oversee the operation of the project described below to remove mercury-containing switches from a number of discarded vehicles at eight automobile dismantler sites in New Jersey;

- 2). Record relevant data associated with the switch removal effort; and
- 3). Prepare a report summarizing the results of the project.

The consultant's coordination and oversight will consist of one visit to each site to describe the switch removal and data collection process and two follow-up visits to each site to ensure that procedures are being followed consistently at each site.

The report will provide details on the numbers of switches collected, the costs of removing and transmitting the switches for recycling, and will estimate the amount of mercury removed from the recycled metals stream by this project. The report will also provide a recommendation of how a regional approach to the collection and removal of mercury-containing switches from discarded vehicles and other items should be designed to maximize removal of mercury from recycled metals for minimal cost.

The goal of this project is to collect the data necessary for the development of a cost-effective program to collect mercury-containing switches from end-of-life motor vehicles that maximizes the amount of mercury that can be removed from scrap prior to its delivery to a scrap recycling facility for further processing.

A group of eight facilities will be identified by the New Jersey Auto Recycling Association (NJARA). The facilities will be representative of the vehicle dismantling industry in NJ and consistent with the objective of the Appliance and Vehicle Mercury Switch Removal (AVMSR) work group objective to establish two centralized points in New Jersey - one centered around the City of Camden, Camden County, and the other in Jersey City, Hudson County. Both sites will also be part of the scope of work for data collection.

The timeframe for the project's completion is late calendar year 2003. The data collection, as determined by the AVMSR work group will include, but not be limited to, the following:

- 1) The number of switches collected
- 2) Approximate weight of mercury contained based on switch characteristics
- 3) Labor time involved in the switch removal and disposal process
- 4) Summary of obstacles encountered for removing switches; and
- 5) Total cost of switch removal, collection or disposal.

As appropriate, information on percentages of such vehicles that are delivered to the facility in a condition amenable to the removal of switches shall be collected, including those delivered to the designated collection sites.

The mercury switches for removal shall include those identified by the AVMSR work group, including a listing of the vehicles with mercury switches, model and year as well as instructions for switch removal. It is anticipated that the procedures described in SAE document J2456, "Mercury Switch Removal Process" will serve as the basis of the instructions, with additional information supplied to the extent that it is available. In the absence of further detailed information to the contrary, hood and trunk light switches will be removed from all domestic vehicles received by the participating sites during the period of this study, regardless of year of manufacture of the vehicle. Similarly, in the absence of additional information to the contrary, hood and trunk light switches will be removed from all foreign-built vehicles built prior to 1993. The AVMSR work group shall supply storage and transport guidance consistent with NJDEP and DOT requirements. Switches will be packaged, shipped, and otherwise handled in a manner consistent with the Universal Waste Rule. Prior to shipping, the switches will be counted and examined by the consultant, and the amount of mercury contained within these switches shall be estimated. If necessary, as determined by AVMSR, a representative subset of the switches shall be retained for further assessment of mercury content.

Before the switch removal process begins, the consultant shall prepare a materials movement and tracking plan that shall describe the procedures to be used to identify the vehicles from which switches were removed, and to record the time spent in removing the switch or switches from each vehicle.

If determined to be necessary by AVMSR, this plan shall also describe procedures to mark vehicles from which switches have been removed and to track the movement and storage of these vehicles through the crushing and shredding process so as to segregate the shredded material from vehicles from which switches have been removed from shredded material from those which did not have switches removed.

A report will be prepared under the direction of the AVMSR work group, and submitted to the NJDEP and USEPA Region II. The report will present quantitative detail of the results of the project, and present recommendations for the development of procedures, which may include a program for certification of mercury-free scrap, that could be put in place by all relevant parties in the recycled metals industry at a statewide and regional level. The report will provide details on the numbers of switches collected, the costs of removing and transmitting the switches for recycling, and will estimate the amount of mercury removed from the recycled metals stream by this project. The report will also provide a recommendation of how a regional approach to the collection and removal of mercury-containing switches from discarded vehicles and other items should be designed to maximize removal of mercury from recycled metals for minimal cost.

The report shall also include estimations of the total amount of mercury emissions that would be eliminated if a mandatory switch removal program were implemented in New Jersey and the surrounding states, including but not limited to Pennsylvania, Connecticut, New York, Delaware, and Maryland.

Recycling and Greenhouse Gas Emissions Reductions

Recycling reduces the consumption of natural resources and the subsequent strain on disposal facilities. The United States Environmental Protection Agency (USEPA) calculated that on average, approximately 1.67 metric tons of CO₂ equivalents are avoided for every ton of municipal solid waste recycled ("Greenhouse Gas Emissions From Management of Selected materials in Municipal Solid Waste", United States Environmental Protection Agency, EPA 530-R-98-013) September 1998. If the MSW recycling rate increases from 34% in 1990 to 60% by the year 2005, a total of 7.7 million metric tons of CO₂ equivalent in avoided GHG emissions would result.

The avoided emissions achieved through MSW recycling are significant. They are also a specific subset of energy conservation and pollution prevention. However, currently there are no intergovernmental Panel on Climate Change (IPCC) guidelines for this source. The IPCC guidelines are utilized by the USDOE, USEPA and the states to develop consistent greenhouse gas inventories. These inventories provide the accounting system necessary for any future, potential, sale and purchase of emission credits under a trading regime. Should such a trading system ever develop, it could provide a new source of revenue in support of recycling, with credits derived from recycling activity trading to raise revenue for recyclers. This could reduce overall recycling system costs, and provide additional economic benefit to recyclers in New Jersey, and elsewhere.

Landfill Gas/Recovery and Greenhouse Gas Emissions Reductions/Emission Trading

Methane, a naturally occurring byproduct of anaerobic decomposition of organic matter, is a powerful greenhouse gas with a global warming potential 21 times greater than equivalents. Solid waste landfills are by far the largest anthropogenic source of methane emissions in the State, representing 72% (13.3 million tons) of methane emissions.

Greenhouse gas savings could be realized through the installation of methane collection and combustion systems at certain landfills that are currently undergoing closure, or other structurally related construction.

The remaining 47 landfills, some open, but most closed, account for about 35% (1.9 million tons) of methane emissions. Utilizing this methane for energy recovery further reduces greenhouse gases from the current fossil fuel usage and is defined as a renewable energy source. Cost effective methods to recover methane from these landfills are available. In instances where the collected methane gas is resold, or utilized to generate electricity, additional revenue stream is afforded the landfill owner.

The Electric Discount and Energy Competition Act (EDECA) N.J.S.A. 48:3-49 et. seq. includes methane gas from landfills as a feedstock qualifying for Class 1 renewable energy support. There are already a handful of landfill gas to energy projects operating at large landfills in New Jersey. In one instance, revenue is being derived not only from the electricity sales, but also from sale of the carbon dioxide emission credits which result

from the project. But other, smaller sized landfills could be suitable for such landfill methane to energy projects. As a strategy to help fund proper landfill closure, and subsequent post-closure monitoring, this landfill gas to energy projects at all suitable landfill facilities within New Jersey should be developed.

Legislative Recommendations

On July 23, 2002 the Department issued advisories warning people about unsafe mercury levels found in 21 species of freshwater fish from water bodies around NJ. Mercury found in products is a significant contributor to the mercury emissions that result in fish contamination.

During 1998 and 1999, the Department worked with the Northeast Waste Management Officials' Association (NEWMOA) to develop model legislation designed to eliminate or reduce non-essential uses of mercury in household, institutional, and industrial products and processes. The model legislation provides a comprehensive framework to help states develop more consistent approaches to managing mercury-containing wastes.

Most of the Northeast states have either proposed or adopted portions of the model legislation. The Department is drafting legislation based on NEWMOA's model to be introduced into the legislature

B.6. Household Hazardous Waste Collection Programs

Many jobs around the home require the use of products containing hazardous components. Certain paints, cleaners, stains and varnishes, car batteries, motor oil, and pesticides are some of these products. The unused portions of these products that require disposal are known as "household hazardous waste." The types of materials that actually constitute a household hazardous waste (HHW) range from more obvious materials like bleach, oil-based paint, paint thinner, gasoline, and lighter fluid, to some less ones like hair coloring products, floor wax, and air fresheners. Americans generate approximately 1.6 million tons of household hazardous waste per year. An average home can accumulate as much as 100 pounds of household hazardous waste in the basement or garage and in storage closets.

According to the United States Environmental Protection Agency's hazardous waste regulation at 40 CFR 261.4(b)(1), that have been adopted by the New Jersey Department of Environmental Protection (Department), household hazardous waste is excluded from regulations as hazardous waste, and is considered solid waste that the households can dispose of with the regular trash. However, in doing so in this manner, these materials end up in the municipal solid waste landfills. While legal, this is not the most environmentally safest disposal option. Household hazardous wastes are sometimes disposed of improperly by individuals pouring wastes down the drain, on the ground, into storm sewers and into the septic systems. The improper disposal, or the putting of HHW out with the regular trash can pose a potential risk to people and the environment. Certain types of household hazardous waste have potential to cause physical injury to the

sanitation workers during collection, could react with other waste in the garbage collection vehicles causing fire, could emit dangerous fumes from chemical reactions at the waste handling facility, contaminate septic systems or wastewater treatment systems, and present hazard to the children and pets while accumulated in the homes.

To discourage residents from disposing of HHW in their garbage and to avoid other improper disposal, all counties in New Jersey have developed and set up HHW collection programs. The Department has provided technical assistance in design of these programs and facilities. Each county has designated HHW collection days when residents can bring their HHW to the county collection site. Three counties, namely Burlington, Monmouth and Morris operate permanent household hazardous waste collection facilities. The collected HHW is characterized by county personnel and shipped to an appropriate facility for recycling or disposal. Over the years the counties have collected materials such as aerosol products, antifreeze, batteries, household driveway sealer, fire extinguishers, gasoline, mercury devices and liquid mercury, motor oil, oil filters, muriatic (hydrochloric) acid, paint and paint stains, pesticides, photo chemicals, pool chemicals, thinners and solvents.

Each county in New Jersey has a designated Household Hazardous Waste Coordinator and the coordinators have the option to join the Association of New Jersey Household Hazardous Waste Coordinators (ANJHHWC) as members. The ANJHHWC produces a yearly newsletter that covers issues pertaining to HHW collection programs. The yearly newsletter features achievements of various counties.

The HHW collection programs have been very popular with the general public and an enormous amount of hazardous waste has been removed from the environment, from the municipal solid waste stream and people's homes.

A summary of the number of households participating in the HHW collection programs and the amounts of HHW collected at the permanent HHW collection sites in the counties of Burlington, Morris, Monmouth and Middlesex is located in Appendix table [B-2](#).

The Department does not require the counties to report data on the amounts of HHW collected and some counties may not have the data available for previous years. However, the data obtained from counties with permanent HHW collections facilities, as shown above demonstrates that the number of households participating in these programs and the amounts collected have been rising every year. Therefore, the Department should encourage and assist the rest of the counties to construct permanent HHW collection facilities to prevent the disposal of such waste in the municipal solid waste landfills.

B.7. Recycling Centers for Class D Recyclable Materials (Used Oil)

Until October 21, 1996 the Department regulated used oil as hazardous waste and existing facilities were operating under the Hazardous Waste Facility permits. On this date the Department reclassified used oil as a Class D recyclable material and it became subject to the Recycling Regulations at N.J.A.C. 7:26A. The Department's used oil

recycling regulations are based on the United States Environmental Protection Agency's used oil regulations codified at 40 CFR 279.

A Recycling Center for Class D Recyclable Material (used oil) is a facility that receives used oil from various generators and registered transporters for storage and processing and is subject to the provisions of N.J.A.C. 7:26A, known as the Recycling Regulations. A typical used oil recycling center operator collects used oil from generators utilizing a fleet of tank trucks, registered with the Department, ranging in nominal capacity approximately from 1,000 to 10,000 gallons. Upon arrival at a recycling center, all the bulk shipments of used oil are analyzed for parameters required by the regulations. Once the analysis is complete and the operator has determined that the material is acceptable, the oil is unloaded into the storage or processing units. The material is then processed by utilizing techniques such as sedimentation, filtration, heat treatment, chemical treatment and blending to produce an on-specification oil product for sale. All the residues generated from the processing of used oil are disposed of at the authorized facilities.

There are six facilities currently operating in the State and have been issued a General Approval by the Department's Division of Solid and Hazardous Waste. These six approved facilities have a combined daily storage/processing capacity of 6,492,020 gallons. According to the data reported to the Department, during the years 2001 and 2000, 18,123,425 and 14,716,628 gallons, respectively, of used oil were processed by these used oil storage/processing facilities.

Used oil recycling centers are required to have adequate spill control mechanisms in place to prevent and contain releases from material handling. The used oil storage and processing tanks are equipped with overfill control devices such as high level alarm, feed cut off etc. to prevent overfilling and spillage during facility operations. All used oil storage and processing units must have an adequate secondary containment system. The secondary containment system must be sufficiently impervious to used oil. The secondary containment system is sloped and operated to drain and remove liquid resulting from leaks, spills or precipitation. The secondary containment system, in addition to the volume displaced by containers, tanks, or equipment, must have a capacity to contain precipitation from a 25-year, 24-hour rainfall event.

Used oil facilities must also have an acceptance/inspection plan for all incoming shipments of used oil. The plan includes a checklist for the use of the facility personnel and contains sufficient details to ascertain that the center does not accept unauthorized materials at the center. The used oil processing centers shall have an on-site laboratory to analyze incoming shipments of off-specification oil and processed on-specification used oil.

The currently operating facilities have a sufficient storage and processing capacity to meet the needs of New Jersey used oil generators. In addition to the used oil processing facilities, there are several used oil transfer facilities operating in the State. The used oil transfer facilities are transportation related facilities that collect used oil from various generators and bring it to their centralized facility for storage for not longer than thirty

five (35) days and for consolidation of different loads of oil. The used oil transfer facilities can also accept used oil for consolidation from other registered transporters. The transfer facilities cannot process used oil to make an on-specification used oil product. The transfer facilities are required to ship all consolidated used oil to a used oil processing facility with thirty five (35) days of its receipt at their used oil transfer facility. Most of the used oil from transfer facilities is shipped to out-of-state used oil processing facilities. Used oil transfer facilities are not required to obtain an approval from the Department but are subject to periodic inspection by the Department's Enforcement personnel.

Two used oil recycling facilities have also been collecting antifreeze (ethylene glycol) and shipping it to antifreeze recycling operators. During the years 2000, 2001 and 2002, approximately 400,000, 500,000 and 700,000 gallons respectively of antifreeze have been collected by New Jersey used oil processing facilities and shipped for recycling. The amount of antifreeze to be collected in the future is expected to increase.

Universal Waste Recycling

In 1996 the Department also incorporated the USEPA's Universal Waste Rule into the NJ Recycling Regulations. This allows the recycling of certain hazardous wastes under a Class D recycling center approval rather than a hazardous waste Treatment, Storage, and Disposal Facility (TSDF) permit. This will enable facilities to profitably recycle materials that would otherwise be disposed. The readoption of the Department's recycling regulations in 2002 amended the Universal Waste Rule to include additional materials. The rule applies to the following materials: batteries, hazardous waste lamps, hazardous waste finishes, thermostats and all other mercury-containing devices, and consumer electronics.

B.8. Composting

Organic material is estimated to account for approximately 15% of the total solid waste stream in New Jersey. This organic stream consists of leaves, grass clippings, brush and other yard wastes, tree trimmings, food waste from residential, commercial and institutional sources and food processing wastes from commercial food processors.

Management of these wastes presents a unique opportunity for New Jersey to utilize a varied mix of technologies and policies. Generally speaking, the less reliant the preferred management policy is on mechanical processing technologies, the more reliant its success is on adequate public education. For example, the most appropriate strategy for proper handling of grass clippings is to simply leave them on the lawn after cutting. For this to succeed, however, an intensive, sustained public education campaign is required statewide. Conversely, technologically advanced municipal waste composting systems are more forgiving in terms of material feedstock (i.e. allowable "contaminant" levels), and require much less material segregation for successful operation.

The State's objective for the management of organic wastes is through a hierarchy of practices as follows:

- 1) Natural decomposition at the point of generation (i.e., Cut-it-and-Leave-It, on-site degeneration and composting);
- 2) Diversion to farmers; Composting using a combination of composting technologies; and Biomass Conversion.

The framework for achieving the state's policy indicated above is currently in place. Regulations were adopted that allow for the mulching of leaves on farmland; a manual that details various leaf composting methods for use by New Jersey municipalities was developed in 1994; brochures explaining the benefits of backyard composting of homeowner generated yard waste and of leaving grass clippings on the lawn were also developed; many counties adopted solid waste management plan amendments that provide for automatic inclusion of vegetative waste composting sites; and a ban on the disposal of leaves as solid waste was established by statute in 1987. These activities, in addition to new strategies, will be continued, as discussed below.

The most cost effective method of organic material management is simply to allow organic materials to decompose naturally at the site of generation. The Department's Cut-It-and-Leave-It policy to promote the on-site management of the State's grass clippings is an example of this policy in action. On-site management also prevents off-site dissemination of pesticides and herbicides in organic matter to which it was applied, which has become an issue of concern in recent years especially concerning the broadleaf (dicotyledonous) herbicide Clopyralid. Grass clippings from sites where this chemical was used have been banned from compost facilities in the State of Washington. New Jersey's Pesticide Control Program is investigating the contamination of compost in New Jersey. Future incorporation of grass clippings into off-site composting will be evaluated in view of that Office's report. If the product from the composting process is not safe, it should not be produced according to the New Jersey Advisory Council on Solid Waste Management.

Following the statutory ban on the disposal of leaves as solid waste, effective in 1988, and an amendment to that ban in 1989 which allowed for the mulching of leaves on farmland, the department, with strong technical and regulatory support from the Department of Agriculture, adopted regulations in 1989 which greatly expanded the options available to municipalities in proper management of their leaves, by allowing for the mulching of up to a six-inch layer of leaves directly onto farmland. These regulations were expanded in 2002 to allow exemptions from permitting for composting on farms and mine reclamation lands when the finished compost is used on site. By providing these alternatives the department made available to farmers large quantities of organic material for incorporation into the soil. This organic addition to farmland is beneficial to much of the soil in New Jersey, and the Department will continue to support this option for New Jersey municipalities and farmers.

To promote the composting of yard trimmings, the Department adopted rules in 1996 that classified yard trimmings as recyclable materials and the facilities that accepted and processed them as recycling centers. Removing the solid waste facility definition removed many onerous requirements that the Department no longer believed were necessary for these types of operations. The rule change also added an exemption from approval for sites accepting less than 10,000 cubic yards of yard trimmings. Several new yard trimmings compost facilities have been developed as a result of the rule changes of 1996. To maintain this trend, the Department adopted additional rules in 2002 that exempt additional types of compost facilities from approval.

In the rule changes of 1996, the Department also attempted to promote composting of organic material other than yard trimmings by redefining source separated organic material as recyclable material such that facilities developed to compost this material would be considered to be recycling centers. Rules for the design and operation of the facilities were less difficult than those for the design and operation of solid waste facilities. One example of this is the provision that allows operations at sites that only accept vegetative food waste without the need for a full enclosure. To continue efforts to promote food waste composting, the Department also added a provision to the rules of 2002 that allows the composting of food waste at the site of generation with distribution of product off site without the need for approval. The Department expects many food processors and other institutions in the state to take advantage of this new provision.

The Department is considering further changes to the recycling rules including a reduction in the 1000-foot buffer requirement for the receipt and processing of grass clippings and food waste in outdoor operations where neighboring property owners agree to a lesser distance. Also being considered generally is addition of flexibility in other design requirements. One example is the requirement for an impervious surface for the composting of vegetative food waste where the Department is studying the possibility of allowing environmental monitoring in lieu of strict adherence to the pad design requirement.

To date, most organic waste recycling has been accomplished through composting. Currently, over 175 facilities for the composting of yard trimmings, including leaves, exist within the State and many of the citizens of the State have come to expect municipal collection and composting of their vegetative yard waste. However, if we expect to attain the 50% MSW recycling goal set by the State in 1993, recycling options for the food waste fraction of organic waste must also be investigated.

Food waste includes uneaten food, food preparation wastes, and biodegradable wastes associated with the consumption and packaging of foods, such as paper plates, napkins, and waxy cardboard. Current estimates by the NJDEP show that in 2000, food waste was 7.4% by weight of the Municipal Solid Waste (MSW) generated within New Jersey. Food waste consists almost exclusively of organic materials. Its chemical (relatively low lignin content) and physical compositions (high moisture content) make it the most readily degradable fraction of MSW. This fact makes food waste an obvious candidate for keeping out of landfills and thus saving diminishing landfill capacity.

Despite having what would seem to be an optimal set of conditions (high population density, and abundance of supermarkets, and a high demand for soil amendments) for the development of a highly successful food waste recycling program, New Jersey currently only recycles 24.7% of its food waste. Even though New Jersey ranks number two in percentage of food waste recycled by state (Goldstein, 2001), it is obvious that much more can be done within the State to increase the recycling rate of food waste and thus MSW. The Department must begin looking at other processing technologies for organic wastes such as digestion, worm composting, and animal feed production and amending the rules to ensure that these methodologies are clearly covered as recycling activities and not solid waste processing; however, obstacles exist.

Obstacles to Food Waste Recycling

The nature of the material; although the optimal moisture content of material for composting is approximately 50-60%, the typical moisture content of food waste can be up to 70%. This relatively high moisture content makes collections more difficult than for the more traditional dry components of MSW. Moist materials are more likely to develop odors and thus collection systems employed would have to be designed to minimize this potential problem. In addition, dry materials, such as leaves and/or cardboard, must be added to food waste prior to composting to decrease the potential odor problems associated with high moisture content and zones of anaerobic degradation. The carbon to nitrogen (C/N) ratio, another important parameter for composting, of food waste is generally less than the optimal ratio of 25:1 and thus materials with a higher C/N ratio, such as paper, cardboard, and/or leaves must be added to food waste prior to composting.

Lack of available facilities and cost: in order to locate a successful food waste recycling facility, several factors must be considered including, but not limited to, positive sentiment by local, County and public organizations, haul distance from the generators to the facility, and distance from the facility to the nearest residences. Currently, the capacity to accommodate food waste recycling on a large-scale is not in place. Only one large-scale facility for composting of food waste recycling on a large-scale is not in place. Only one large scale facility for composting of food waste in New Jersey exists and although located in the central part of the State, geographically, it is still fairly far from the most densely populated areas of the state: the northeastern counties, including Bergen, Essex, Union, Hudson. In New Jersey, a very high population density and lack of available land of sufficient size makes siting an outdoor windrow facility very difficult, especially in the northeastern portion of the state. As a result, the feasibility of using large indoor in-vessel composting facilities or digesters would most likely have to be assessed if food waste recycling on a Statewide basis was to be pursued. These facilities minimize the odors and environmental impacts of windrow composting, produce similar quality compost in a reduced time span, and require less land area; however, they have significantly higher capital costs associated with their operation. These costs vary significantly, based on design and operating criteria. Digesters offer the added benefit of producing methane, which can be used in power generating operations. However, taking on costs associated with siting and constructing any type of new facility will most likely

not happen any time soon due to debt repayment obligations that most counties are still under and a reluctance to divert any new solid waste types from their current disposal facilities.

Consumer confidence and lack of standardized analytical criteria. Another problem with food waste compost is the lack of confidence the public or other end users have in the quality of the material. Many investigations in Europe indicate that quality and marketing of the end product is the most crucial composting issue. In order to increase the confidence and thus demand for organic waste compost, clear and uniform regulations with regard to what is suitable to be composted and how the end product should be managed and controlled need to be developed and supported on a state and national scale.

The US Composting Council (USCC) has initiated a Seal of Testing Assurance (STA) Program, which intends to improve customer confidence in compost quality by encouraging compost producers to employ standardized analytical methods to test the chemical, physical and biological quality of their products. If the compost is sent to approved laboratories and meets all state and federal regulations concerning heavy metals and pathogens, the USCC will approve the compost as "STA certified" permitting the use of the STA logo on the bagged product. This program closely resembles the successful programs followed in Europe in providing consistent quality compost products. However, the program is still in its infancy and until the demand for a certified product increases, the number of participants in the STA program will be limited. In addition, each state has different regulations and standards for certain types of compost and it's difficult to satisfy a national customer base.

Overall, food waste recycling is an idea that the State wants to promote. This Plan update does not propose specific solutions to the problem, but emphasizes that the State needs to seek the input of all stakeholders, including generators, haulers, composters and markets in an attempt to determine how best to proceed in moving food waste recycling forward in New Jersey.